

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Jari SIRVIÖ et al

Art Unit: 3617

Application No: 10/500,056

Examiner:
Jesus D. Sotelo

Filed: June 23, 2004

For: ARRANGEMENT FOR STEERING A WATER-
CRAFT

DECLARATION OF KARL HAMBERG

COMMISSIONER FOR PATENTS
P.O. Box 1450
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Sir:

I, Karl Hamberg, declare as follows:

1. I was awarded the degree of Master of Science in Naval Architecture by Helsinki University of Technology in 1972.

2. Currently I am employed by Aker Arctic Technology Inc., which is a subsidiary company to Aker Finnyards Oy. Between 1973 and 2005 I was employed by Aker Finnyards Oy or its predecessors in Helsinki. For a period of 16 years, I acted as Head of the Project Design department, responsible for the Naval Architectural aspects of numerous projects and newbuildings. These include passenger cruise vessels, RoRo passenger ferries, naval vessels, icebreakers, cable layers, supply vessels, oceanographic research vessels, and container vessels.

3. By virtue of my education and experience, I am familiar with the level of skill of those engaged in the design and construction of water craft, and in particular with the design and construction of propulsion means and steering means for water craft, and I am an expert regarding the matters of opinion addressed in this declaration.

4. I am familiar with the contents of U.S. Patent Application No. 10/500,056 filed June 23, 2004 ("the '056 application"). I am also familiar with the disclosure of U.S. Patent 6,709,109 (Heer et al) and the English language abstract of Japanese Laid-Open Publication No. JP-914239A (Oshima), as cited by the examiner in prosecution of the '056 application.

5. The '056 application is assigned of record to Kvaerner Masa-Yards Oy, a predecessor of Aker Finnyards Oy, which in turn, is the parent company of my current employer. I have no interest in the outcome of the '056 application that is different from the interest of other employees of Aker Finnyards Oy or its subsidiaries.

6. Typically, RoRo vessels have frequent port calls and therefore good maneuverability is important. Steering propulsion devices are attractive for use with RoRo vessels, because they provide both good maneuverability and efficient propulsion. Accordingly, in a conventional RoRo vessel employing steering propulsion devices, the steering propulsion devices are designed to provide the propulsion power for the vessel.

7. It is known to provide a RoRo vessel with a wide stern ramp for transfer of cargo between the cargo space and port facilities. The available height for the installation of propulsion devices below the cargo space is dictated by port facilities, hydrodynamic requirements and ship stability. It is obvious that the size of a steering propulsion device is, inter alia, dependent on its power rating. In a conventional RoRo vessel employing steering propulsion devices that are sized to provide the propulsion power for the vessel, the upper parts of the steering propulsion devices extend up through the cargo deck, limiting the cargo space and preventing unobstructed movement of the cargo during loading and unloading.

8. An aim of the invention described in the '056 application is to provide more space and better utilization of the cargo

space in RoRo vessels. The invention is based at least in part on the recognition that the power of the steering propulsion devices necessary to achieve good maneuverability is typically well below the required power for propulsion.

9. The solution described and claimed in the '056 application is based on utilizing a main propulsion device to provide most of the power needed for propulsion of the vessel and at both sides thereof two smaller steering propulsion devices for steering and to provide the balance of the power needed for propulsion. The combined power output of the steering propulsion devices should be less than 50% of the total output of the propulsion arrangement.

Hereby the ship can be provided with efficient propulsion means as well as good manoeuverability due to the steering propulsion devices, which can remain relatively small and relatively lightweight and, thus, require less space than the steering propulsion devices of Heer et al. It is to be expected that this arrangement would be less expensive compared to a traditional one with two large steering propulsion devices, and still, it allows for more cargo and more efficient movement thereof during harbor operations.

10. The reference Oshima, JP 9142391 A, discloses a vessel which is intended for oceanic research and is provided with a propulsion configuration selected to achieve a reduction of underwater noise, which is known to be harmful for underwater acoustic equipment. Although this configuration resembles the one utilized in accordance with the invention as such, Oshima is entirely silent as regards any problems related to better utilization of cargo space at the aft part specifically regarding RoRo vessels. On the basis of the figures the ship does not have any cargo space at the aft part at least suitable for RoRo cargo. Oshima is silent also regarding the division of output power between the main propulsion means and the steering propulsion

devices.

11. The reference Heer et al, US 6,790,109 B1, discloses an electric steering propeller arrangement. The aim of Heer et al is to provide more space in the stern of the ship, specifically of the RoRo type, when electrical steering propellers are utilized. The solution is to use special arrangements at the upper part of the steering propellers enabling flatter mounting thereof, and thus, gain more space on the cargo deck. Thus, the goal of the arrangement shown by Heer et al is much the same as is the case with the present invention. The total propulsive power is in the case of Heer et al distributed to the steering propellers. So, in principle, the common aim of Heer et al and the present invention is to provide for more space for cargo in RoRo vessels and better utilization of the space available during harbor operations. In practice, however, the aims have been achieved in quite different ways resulting in alternative solutions respectively. Heer et al has chosen to modify the upper construction of the propulsion arrangement based on steering propellers only, whereas according to the invention quite another kind of propulsion arrangement has been selected based on distributing the power output between different types of propulsion means, which permits use of lower power, and hence smaller, steering propulsion devices. As a consequence, compared with Heer et al, the arrangement according to the invention has a potential for better redundancy, lower weight and costs, since the large steering propellers of Heer et al require heavy, large and expensive electric generator sets to provide the needed electric power for the steering propellers.

12. As regards combining the teachings of Heer et al and Oshima, due to excellent manoeuverability inherently provided by the steering propellers, there is no need to totally change the propulsion configuration of Heer et al, which has specifically and already been adapted for the space requirements as disclosed.

The hydro-acoustic noise problem referred by Oshima has no relevance in the ship types discussed by Heer et al.

13. Therefore in my opinion a person of ordinary skill in the art, presented with the disclosures of Heer et al and Oshima, would not have found it obvious to combine these disclosures in the manner suggested by the examiner and arrive at the invention as claimed in the '056 application. In my opinion, the only possible reason why a person of ordinary skill in the art would apply the propulsion and steering arrangements disclosed by Oshima to the ship of Heer et al would be if that person were reconstructing the invention claimed in the '056 application with benefit of hindsight.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18, United States Code, Sec. 1001, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.


Name

April 28th, 2006
Date